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Comparing children's experiences of schools-based bullying across countries

Bradshaw, J., Rees, G., Crous, G. and Turner, N.

Abstract

We make use of a newly-available international data set from a survey of children aged 8 to 12 years old across 16 diverse countries to explore variations in rates of schools-based bullying of children and the associations between experiences of being bullied and child subjective well-being, both within and between countries. The analysis is consistent with previous international studies in showing very substantial variation in rates of bullying at the country level. There are also between-country variations in the rates of different types of bullying. In terms of individual variations, we find significant variations in the likelihood of being bullied according to age, gender and deprivation, although the influence of these factors varies by country. There was no apparent link at a country-level between rates of bullying and mean life satisfaction scores. On the other hand, in almost all countries, children who had been bullied had significantly lower subjective well-being than children who had not. However there were substantial differences in the strength of association across countries. We find some tentative evidence to suggest that being bullied may make a greater contribution to explaining variations in child subjective well-being in rich countries than in poor countries. The implications of the findings and directions for future research are discussed.

Key words

Bullying

Subjective well-being

Happiness

Comparative research

1 Background

In this article we present new analysis of data relating to children's experiences of being bullied (physically hit and socially excluded) by other children at school from Wave 2 of the Children's Worlds survey. This wave of the survey has so far been conducted with over 56,000 children aged around 8, 10 and 12 in a diverse set of 16 countries around the world. We present analysis of variations between countries in the prevalence of these experiences, the characteristics and factors associated with their prevalence, and associations with children's subjective well-being.

1.1. Defining bullying

Olweus (2013), one of the pioneers of research in this field, defines bullying as having three key characteristics – intentionality (that is the perpetrator(s) of the bullying intend or aim to inflict harm); some repetitiveness (in most cases an isolated incident would not be regarded as bullying); a power imbalance (this imbalance may stem from physical strength, numbers of people, popularity or status – as viewed by the person experiencing the bullying). Olweus stresses the importance of including the presence of a power imbalance in definitions and

measures of bullying as otherwise there is a risk, for example, of including the initiators of physical aggression who may also be hurt as a result. This definition is not exclusive to childhood bullying and can also be applied, for example, to work-placed bullying.

1.2 Research on the cross-national prevalence of bullying

There is a growing body of evidence on the cross-national prevalence of bullying including from two major international data sources. The World Health Organization's Global School-based Student Health Survey (GSHS) has gathered data from children aged 13 to 17 in over 90 low- and middle-income countries while the Health Behaviour in School-aged Children survey (HBSC) provides data from children aged 11 to 15 in over 40 high-income countries in Europe and North America. Both studies based their questions on Olweus's definitions.

Both these studies show that there are wide variations in bullying rates between countries. Two analyses of subsets of countries within the GSHS have found proportions of children being bullied in the last 30 days ranging from 7.8% in Tajikistan to 61% in Zambia (Fleming and Jacobsen (2010) using data gathered between 2003 and 2006 in 19 countries) and proportions of children experiencing at least three bullying incidents in the last 30 days ranging from less than 4% in Macedonia to around 34% in Ghana and Egypt (Wilson et al. (2013a) using data from 15 countries in 2006-8). Similarly in relation to HBSC data, Currie et al. (2012) report rates of children aged 11 in the 2009/10 survey being bullied at school at least twice in the last couple of months ranging from 2% of girls and 5% of boys in Armenia to 27% of girls and 32% in Lithuania. There were also wide ranges in the 13- and 15-years-old age groups. Using a slightly different definition (the percentage bullied at least once). Klocke et al. (2015) report rates ranging from 14% in Sweden to 59% in Romania for the same survey pooled across genders and age groups.

As yet there is no clear explanation for these wide variations. Due et al. (2009) analysed HBSC data from 35 countries in 2001/2 and found that a country's wealth (GNI) did not explain between-country variations but that economic inequality (Gini coefficient) did. Elgar et al. (2009) also found a significant link between rates of school bullying and income inequality using HBSC 2005/6 data. Wilson et al. (2013a) analysis of 15 low- and middle-income countries did not find significant associations between four country-level variables (GDP, Gini coefficient, pupil-teacher ratio and intentional homicide rate) and bullying rates.

While many studies have focused on school-based bullying, there is also some evidence of the prevalence of sibling bullying and a growing body of research on cyberbullying. We do not review this evidence here as the focus of our analysis is on bullying experienced within school.

1.3 Research on characteristics and contextual factors associated with bullying

There are different gender patterns in prevalence of bullying for different forms of bullying and across different countries. In the HBSC study (Currie et al., 2010) boys tended to report higher levels of bullying than girls in most countries but the differences were only statistically significant in some. Similarly, in Fleming and Jacobsen's (2010) analysis of 19 GSHS countries the mean bullying rate was higher among boys than girls and this gender pattern was statistically significant in around half the countries. Wilson et al. (2013a) also report higher overall rates of bullying among boys than girls.

There is relatively consistent evidence of decreases in bullying rates with age – Currie et al., (2010); Due et al (2009) and Fleming and Jacobsen (2010) all finding statistically significant age-related declines, although age was not statistically significant in Wilson et al.'s (2013a) analysis.

There is also fairly consistent evidence across these studies of a socio-economic gradient with poorer children being more likely to experience being bullied, although a meta-analysis of this relationship concluded that the relationship was relatively weak (Tippett and Wolke, 2014).

A range of other correlates of bullying at the individual level have been found. One important factor is the increased risk of children in minority groups including children with disabilities; lesbian, gay, bisexual and transgender youth; children who are obese; children with emotional and behavioural problems (Juvonen and Graham, 2014).

1.4 Research on the potential impacts of bullying

There is an extensive literature on the association between experiences of being bullied and a range of indicators of child well-being. It should be noted that children who both experience and perpetrate bullying tend to be at increased risk compared to those who only fall into one category. However we do not discuss that distinction further here as our own analysis only relates to children's experiences of being bullied.

One area of focus in relation to the impacts of bullying has been the development of mental health problems. Arseneault et al. (2010) reviewed a range of research showing that children who are bullied are at elevated risk of internalizing problems – social isolation, depression, anxiety, self-harm, suicidal ideations and suicide attempts – and externalizing problems such as violent behaviour, carrying a weapon and bullying others. These findings extend across a range of countries – for example Owusu et al. (2011) found an association between being bullied and poorer psychological health in Ghana; and Wilson et al. (2013b) report an association between being bullied and depression in Tanzania.

There is also a range of evidence linking being bullied with increased likelihood of other negative outcomes. Carlerby et al. (2013) found that, in a large survey sample in Sweden, children aged 11 to 15 who had been recently bullied had an increased probability of subjective health complaints. A meta-analysis by Gini and Pozzoli (2013) found that children who were bullied had increased risk of psychosomatic problems. Ortega et al. (2012) found an association among European adolescents between being bullied and negative emotions.

In terms of the associations between experiences of being bullied and child subjective well-being, a number of single-country studies have found significant associations between experiences of being bullied and lower life satisfaction – for example Kerr et al. (2011) in the US; Tiliouine (2015) in Algeria and You et al. (2015) in Korea. Lee and Yoo (2015) used data from the pilot wave of the Children's Worlds survey to analyse family, school and community correlates of children's subjective well-being and found that experiences of being bullied made a significant contribution to explain variation in individual children's subjective well-being across a pooled sample of 11 countries, when considered alongside a range of other factors. Klocke et al. (2014) found evidence of varying effects of bullying on subjective well-being across countries using HBSC data.

Most of the above evidence is based on cross-sectional data. There is also a growing interest in, and recognition of, the potential long-term detrimental impacts of being bullied in childhood. Ttofi et al. (2011) and Farrington et al. (2012) undertook systematic evidence reviews and concluded that experiences of being bullied in childhood are a predictive factor for depression later in life, taking into account other childhood risk factors of depression. Recent research has generally strengthened and extended these conclusions from reviews of earlier research. Wolke et al. (2013) found that, in a longitudinal study in the US, adults who had been bullied as children had increased likelihood of poor health, economic and relationships outcomes, controlling for a range of other factors. They concluded that: *Being bullied is not a harmless rite of passage but throws a long shadow over affected people's lives*. A similar conclusion was reached in an analysis of a UK longitudinal study (Takizawa et al., 2014). Takizawa et al. (2015) and Hager and Leadbetter (2015) also found evidence of associations between experiences of childhood bullying and adult health problems. Lereya et al. (2015) found similar associations with poorer adult mental health and Klomek et al. (2015) with depression and anxiety during adulthood; although in one study, Boden et al. (2016) found that bullying victimization in childhood was unlikely to be a cause of adult psychotic symptoms. In summary there is now considerable evidence from a range of studies (reviewed in Wolke et al, 2015; McDougall & Vaillancourt, 2015) of the negative impact of experiencing bullying as a child on outcomes in later life and of a dose effect of bullying – i.e. more frequent and more severe experiences are associated with worse outcomes. Two of the above studies have estimated the long-term impact of being bullied as a child as greater than childhood maltreatment by parents (Lereya et al, 2015) and similar to that of being placed in public care (Takizawa, et al., 2014).

1.5 Research questions

Although there is a vast body of research on childhood bullying, there has been relatively little attention to the connections between being bullied and subjective well-being, particularly in international comparative research. The analysis we present in this paper using data from Wave 2 of the Children's Worlds study builds on and extends the analysis by Klocke et al. (2014) and Lee and Yoo (2015) in two key ways. First, the data set we use includes a more diverse set of countries and a younger age group than the HBSC survey of high-income countries used by Klocke et al.; and at the same time contains a larger number of countries with more representative samples than the pilot Children's Worlds data used by Lee and Yoo. Second, we do not replicate the multilevel modelling approach in these two earlier studies, but instead seek to understand the specific associations between bullying, other background factors and subjective well-being within countries and how these associations vary between countries. Thus the questions we address are the following:

1. What contextual factors are associated with the likelihood of being bullied and how does the strength of these associations vary between countries?
2. What is the relationship between the likelihood of being bullied and children's subjective well-being and how does this relationship vary between countries?

Previous comparative research on the association between subjective well-being and bullying using HBSC

We know from previous analysis (Klocke et al (2015) of the Health Behaviour of School Aged children survey that rates of bullying vary substantially between countries. In Figure 1 14% of children aged 11-15 have been bullied in Sweden and 59% in Romania in 2009/10. There seems to be no obvious pattern to this ranking of countries – former communist countries seem to have higher rates of bullying, but so do Switzerland and Austria, and Croatia does not. The Nordic countries are not all at the best countries, and the Anglophone countries seem to perform unusually well for this kind of league table.

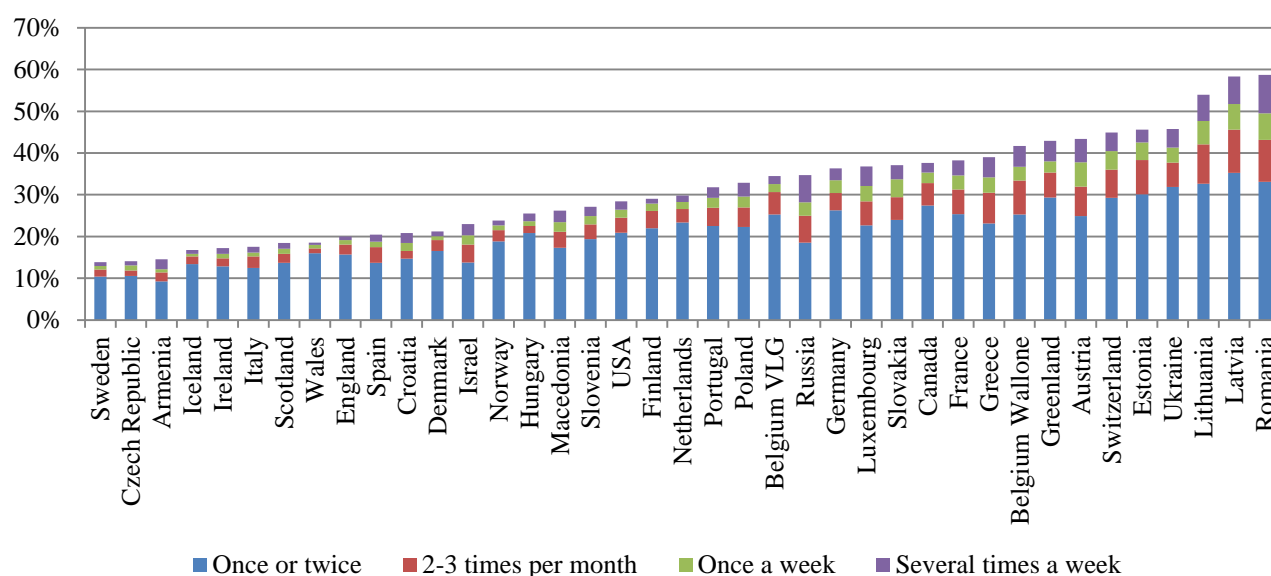


Figure 1: Rates of bullying HBSC 2009/10

We also know from the HBSC that being bullied is more common for boys – 31% of boys compared with 27% of girls had been bullied in the last three months and that it declines with age – at 11 33% at 13 31% and at 15 24% have been bullied in the last 12 months. Bullying is also one of the few factors associated with variation in the subjective well-being of children (Klocke et al 2014, Rees et al 2016). Figure 2 plots the rate of bullying at least weekly against subjective well-being. The proportion (r squared) explained is 8% and this is despite the fact that subjective well-being and bullying both decline with age.

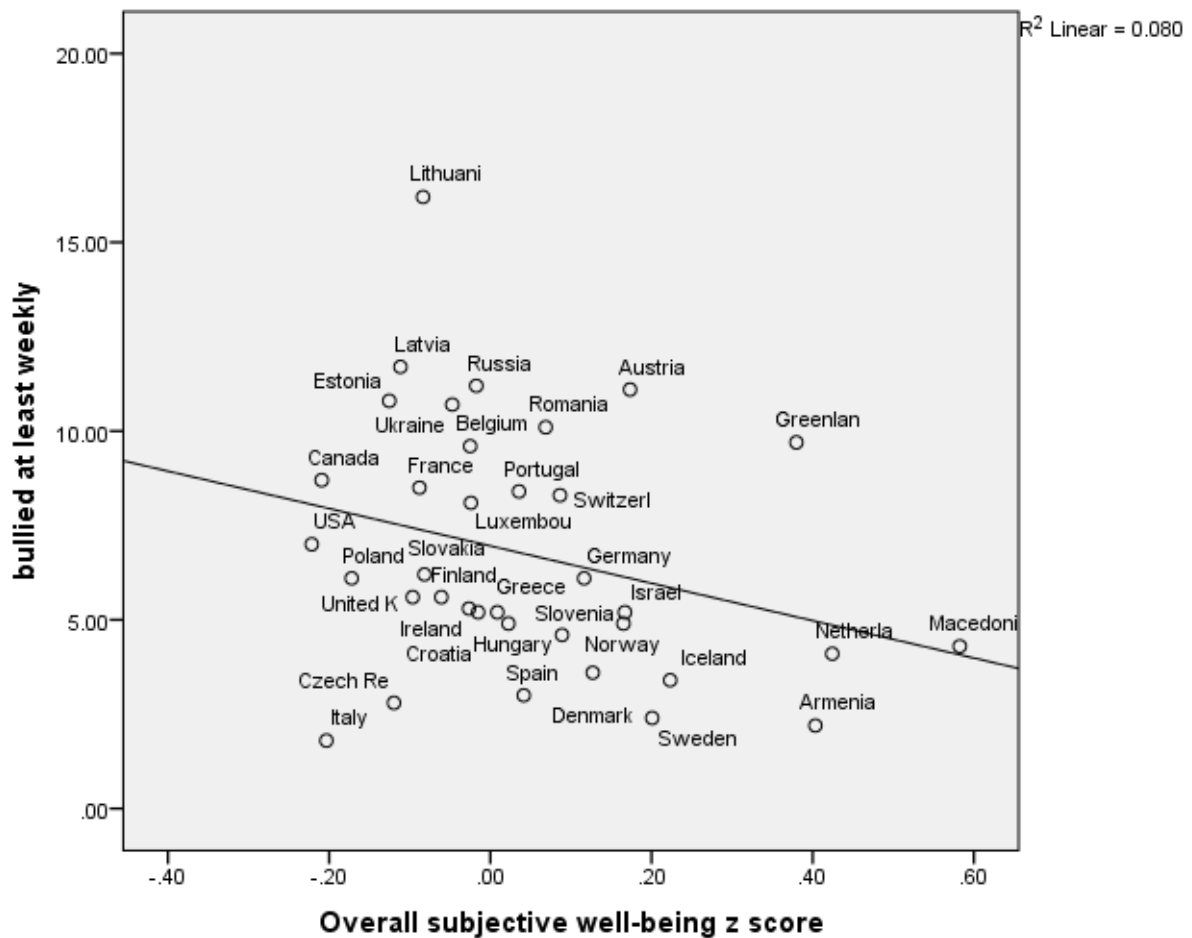


Figure 2: Bullying and subjective well-being Own analysis of HBSC (2009/10)

We used regression to produce a model to explore the impact of bullying on subjective well-being. Included are gender, age, family affluence and being bullied in the last two months. The proportion of variance in subjective well-being explained by his model in a pooled sample of all the countries if bullying is excluded is 9% but when bullying is added it increased to 15%. When the model was run country by country it varied between 21% in Norway and Austria and 9% in Slovenia.

Table 1: Regression model of subjective well-being including being bullied in the last two months using HBSC 2009/10

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.410	.010		145.755	.000
Gender	-.204	.004	-.103	-47.304	.000
Age category	-.340	.003	-.277	-127.592	.000
Family affluence z score	.099	.002	.096	44.156	.000
Bullied past 2 months	-.266	.002	-.261	-119.803	.000

Figure 3 plots the country level beta coefficients for bullying generated for each country by that model and shows that bullying is a more important factor in Austria and Norway than in Greenland and Italy. This is not necessarily only because bullying rates are higher in those countries. It may be because the other variables in the regression - age, gender and family affluence are less important than in other countries.

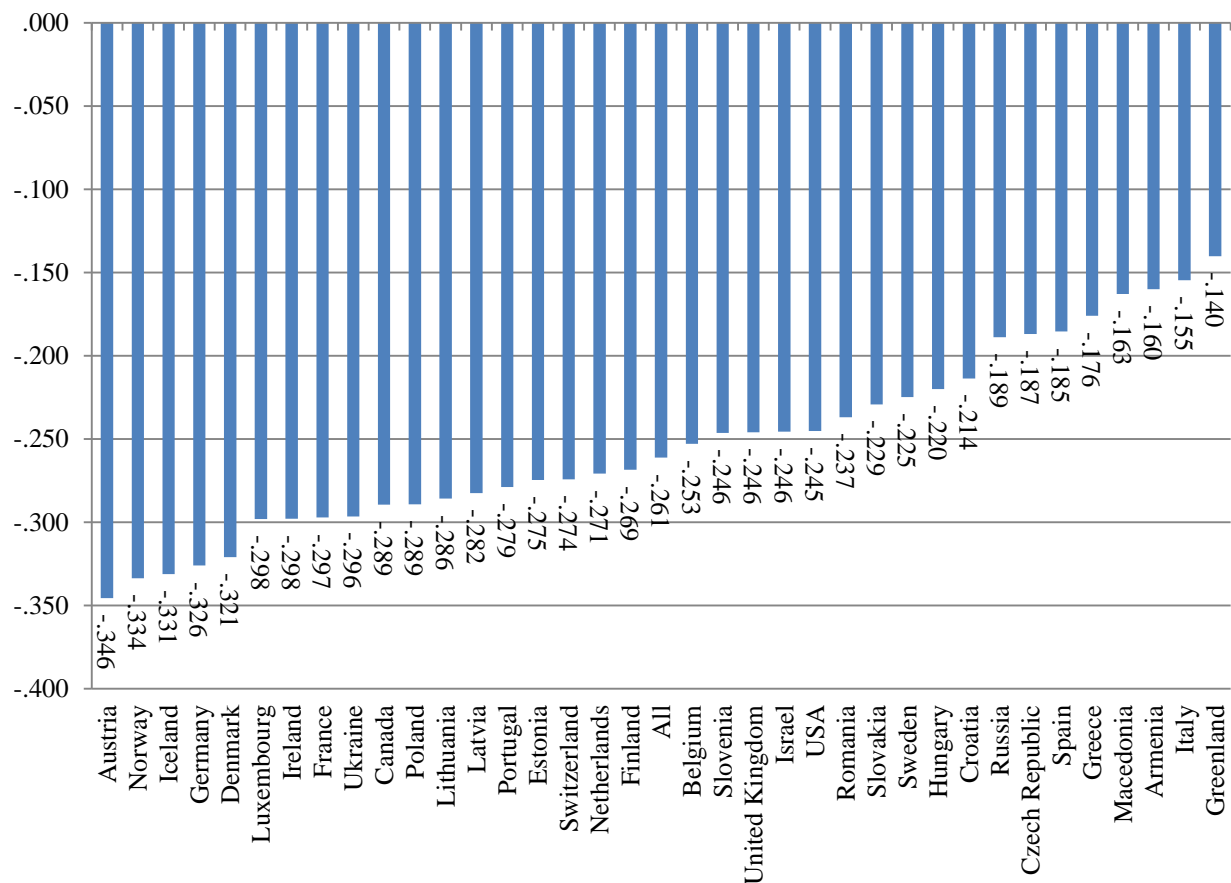


Figure 3: Beta coefficients on bullying by country. Own analysis of HBSC 2009/10.

2 Materials and methods

This article uses data from all three age groups (children around 8, 10 and 12 years of age) in the Children's Worlds survey in all countries that had completed their surveys before the end of 2015. This amounts to a total sample of over 56,000 children in 16 countries.

2.1 Measures

2.1.1 Bullying

The survey did not ask a questions or provide explanations using the word 'bullying' as it was found during the piloting of the questionnaire that there was no easy translation of that word into some of the languages of the countries included in the survey. So children were asked two related questions: 'How often in the last month have you been hit by other children in your school?' and 'How often in the last month have you been left out by other children in your class?' The responses were: never, once, 2-3 times, more than 3 times.

There are some points to acknowledge in terms of the question about being hit. With reference to the Olweus definition discussed earlier, the wording does not incorporate the issues of power imbalance or intentionality. It is possible that some children answered this question about incidents where they had a fight and where there was no power imbalance and these would be situations that might not generally be considered to be bullying. This limitation should be borne in mind in interpreting the results.

It should be noted that the questions do not cover relational bullying at school – for example, being called names by other children. Clearly also there are other forms of bullying outside school including sibling bullying and cyber bullying which we did not cover in the questionnaire.

2.1.2 Contextual variables

There are a relatively limited number of contextual variables in the data set which might be used to analyse the background factors associated with the likelihood of being bullied. Variables that were available, and that we have made use of, are: gender, age group and a measure of deprivation. The latter measure was calculated from items that children were asked whether they had, or had access to – for example, clothes in good condition to go to school in; and a computer at home. We use two versions of this scale because children in the 8-years-old survey were asked about a smaller number of items than children in the 10- and 12-years old surveys. Thus where we analyse all three age groups in combination we use a four-item version of the scale, with scores from 0 to 4 and a higher score indicating greater deprivation; and where we analyse only the two older age groups we use a nine-item version, with scores from 0 to 9.

2.1.3 Subjective well-being

As with the deprivation items, the questions in the Children's Worlds survey on subjective well-being were not identical across the three age groups. A set of five statement-based items derived Huebner's Student Life Satisfaction Scale (Huebner, 1991) – for example '*My life is going well*' – was used for all age groups. For the older two age groups, children were asked to respond on an 11-point scale from 0 to 10 where 0 represented 'Not at all agree' and 10 represented 'Totally agree'. However during piloting it was found that this response scale was not suitable for use with children aged eight years old in some countries and so a shorter five-point response scale with emoticons was used with the youngest age group.

For each of the age groups, scales have been calculated as the sum of the scores for the five items, transformed for ease of interpretation onto a range from zero to 100, where higher scores indicate higher subjective well-being. However the two versions of the scale are not strictly comparable due to the differences in response options and the result is that we have had to run some of the analysis for the youngest age group separately from that for the older two age groups.

2.2 Analysis

All of the analysis we present uses weightings available in the data sets to correct for imbalances and non-response in the samples. Where we present pooled statistics for the 16 countries as a whole, we also weight the data so that each country makes an equal contribution to the overall statistics (i.e. despite the original sample sizes differing).

The analysis is presented in three sections. First we look at descriptive analysis of the bullying items and how the responses to them vary across countries. Next we analysis how the likelihood of being bullied varies at the individual level according to contextual characteristics. Finally we look at the association between being bullied and subjective well-being.

Where we discuss statistically significant findings these refer to a p-value of less than 0.01 unless otherwise stated.

3. Results

3.1 Descriptive analysis

Figure 4 shows that Turkey has the highest proportion of children who have experienced being hit and South Korea has the lowest by some margin.

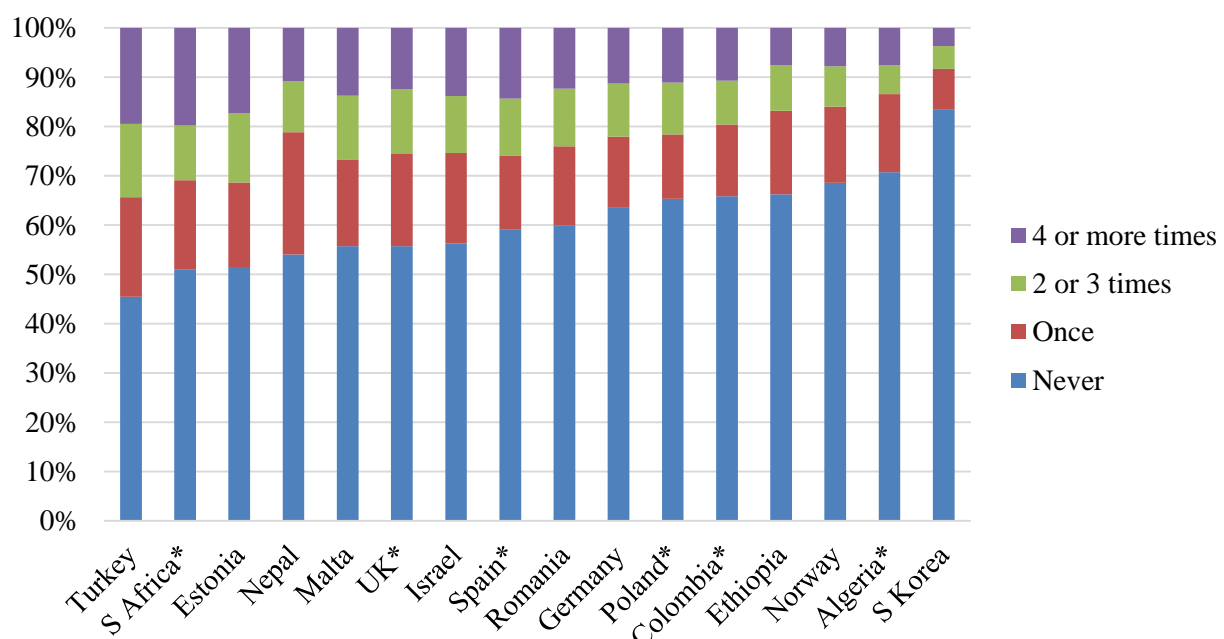


Figure 4: How often: Hit by other children in your school¹

As we can see in Figure 5, a very different pattern emerges for children left out. The UK scores worst on this and South Korean scores best again.

There is an association between the proportion of children hit and left out – the individual scores have a correlation of $r=.362$ and the mean scores at country level correlate $r=.601$, thanks partly to S. Korea being a low outlier on both indicators. Turkish children are more likely to experience being hit than left out and English and Romanian children are more likely to experience being left out than being hit.

¹ *indicate these samples were not representative of the whole country. Thus in the UK it was England, Spain Catalonia etc.

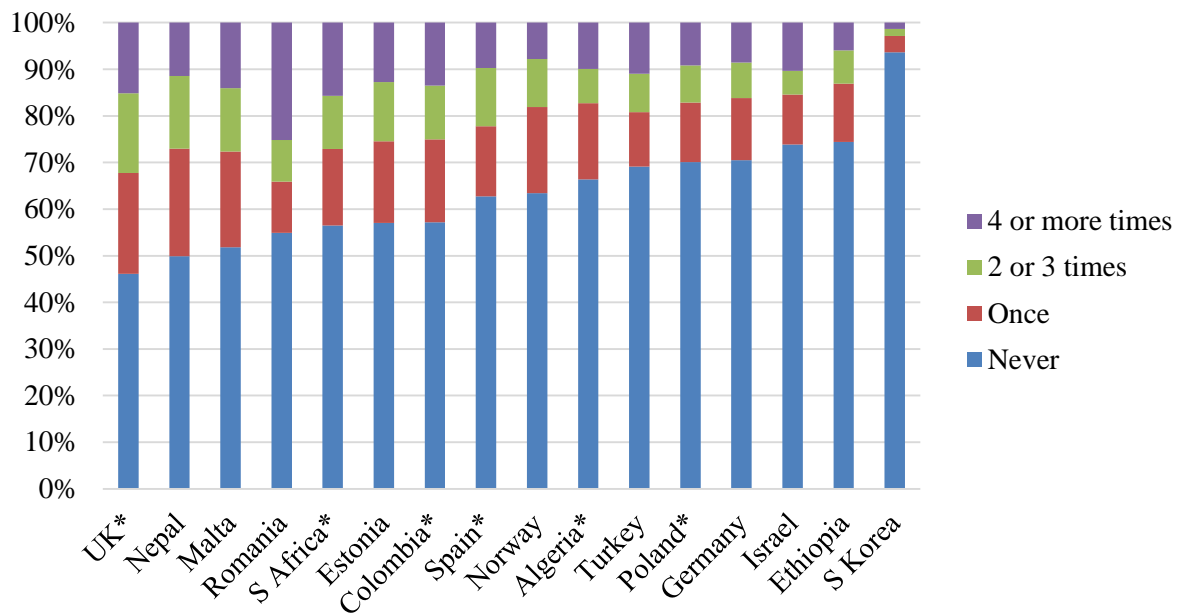


Figure 5: How often: Left out by other children in your class

It is possible to combine these scores and obtain a bullying variable with 3 categories: I've never been hit or left out by peers in the last month; I've been hit OR left out by peers in the last months; and I've been hit AND left out by peers in the last month.

Figure 6 ranks the countries by the proportion that had been hit and/or left out. In the rest of this paper we describe the experience of being hit or left out as being bullied. Bullying is most prevalent in S. Africa, Malta, Nepal and the UK and much less common in S. Korea. There is no obvious pattern in these results – European countries appear across the distribution and there is no apparent association with national wealth.

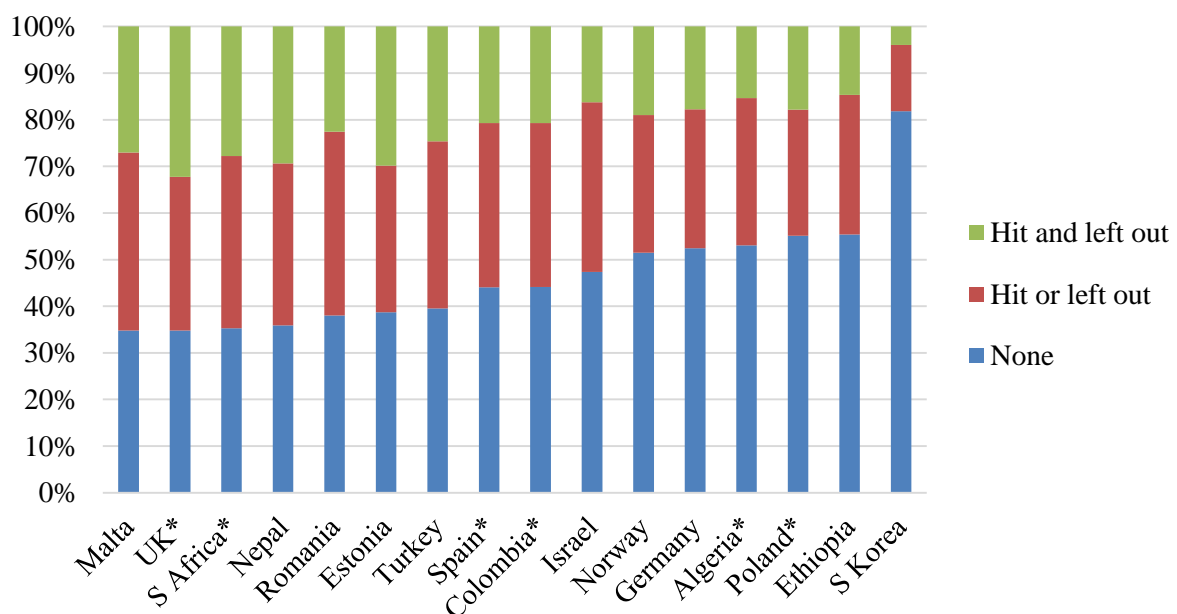


Figure 6: Bullying: how often have you been left out or/and hit by peers in the last month? Variations by country.

3.2 Contextual factors associated with likelihood of being bullied

How do we explain this variation in bullying rates? Table 4 shows that there is an association between the bullying variable and age group. Both types of bullying decline with age group, and bullying declines with age group and in particular being hit and left out.

Table 4. Variations in bullying variables by age

Have you ever been left out or/and hit by others?	Age group			
	8-years-old	10-years-old	12-years-old	Total
Never	38.8%	45.1%	55.3%	46.5%
Hit or Left Out	34.3%	33.0%	29.9%	32.4%
Hit and Left Out	26.9%	21.9%	14.8%	21.1%

Boys are more likely to experience being hit (54% compared with 50% for girls) but there is no difference in the proportion left out by gender. Thus more boys reported having been hit or/and left out by peers in the last month than girls but there was no difference in the proportion of boys and girls that were left out (see Table 5).

Table 5. Variations in bullying variables by gender

Have you ever been left out or/and hit by others?	Gender		
	Boy	Girl	Total
Never	43.7%	49.3%	46.5%
Hit or Left Out	33.0%	31.8%	32.4%
Hit and Left Out	23.3%	18.9%	21.1%

We also explored the association between the four-item index of deprivation based on lacking clothes in good condition to go to school, a computer at home, access to the internet, and a family car for transportation. In the pooled sample there was a weak association between deprivation and both being hit $r = -.041^{**}$ and being left out $r = -.025^{**}$. The number of the items that children lack in the pooled sample is higher for those who have been hit or left out and higher for those who have been hit and left out. This pattern holds for all countries in the sample except Ethiopia and Nepal, and in Spain there is no difference between hit or left out and hit and left out.

Table 6. Variation in mean deprivation by bullying

Have you ever been left out or/and hit by others?	Std.		
	N	Mean	Deviation
Never	19289	0.758	1.158
Hit or Left Out	13207	0.863	1.174
Hit and Left Out	8469	0.906	1.188

Table 7 show the results of a logistic regression of the odds of being bullied at least once (either type of bullying) using these variables for the pooled sample. All the independent

variables are significant – being a girl and being in an older age group reduce the chances of being bullied and deprivation increases them. The explanatory power of the model is quite weak (Nagelkerke pseudo- $R^2 = 0.034$).

Table 7: Logistic regression of the odds of being bullied (all age groups)

	B	S.E.	Wald	df	Sig.	Exp(B)
Female						1.000
Male	.245	.019	170.999	1	.000	1.278
Lacking no items			209.737	4	.000	1.000
Lacking 1 item	.308	.028	120.078	1	.000	1.361
Lacking 2 items	.398	.039	105.294	1	.000	1.489
Lacking 3 items	.204	.029	48.272	1	.000	1.226
Lacking 4 items	.131	.079	2.733	1	.098	1.140
8 years old			653.523	2	.000	1.000
10 years old	-.243	.025	94.198	1	.000	.785
12 years old	-.627	.025	634.230	1	.000	.534
Constant	.194	.023	73.589	1	.000	1.214

Table 8 shows the results of similar logistic regressions for each country. For simplicity of presentation, odds ratios are provided for age group and deprivation treated as continuous variables. Deprivation makes a significant contribution to the model in eight countries with the strongest effects in Estonia and Poland. Age is significant in most countries – the strongest age-related declines are in Spain and South Korea, but there is no significant age pattern in Colombia, Ethiopia, South Africa and Turkey. Gender makes a significant contribution to the model in nine countries. The largest effect was in Colombia. The overall explanatory power of the model varied considerably between countries. It was highest in Spain and Germany where the Nagelkerke pseudo- R^2 was above 9% and lowest in Ethiopia and Turkey where it was 1% or lower. Thus the variation in likelihood of being bullied according to age, gender and deprivation is much greater in some countries than in others.

Table 8: Logistic regressions of the odds of being bullied (all age groups) by country: Explanatory power and odds ratios

Country	Pseudo R ²		Odds ratios		
	Cox & Snell	Nagelkerke	Deprivation	Age	Gender
Algeria*	0.027	0.036	1.158	0.843	1.299
Colombia*	0.031	0.042	ns	ns	2.008
Estonia	0.050	0.067	1.438	0.790	1.398
Ethiopia	0.004	0.006	ns	ns	1.236
Germany	0.068	0.091	ns	0.741	1.410
Israel	0.044	0.059	1.284	0.789	ns
Malta	0.023	0.031	ns	0.830	ns
Nepal	0.021	0.029	ns	0.838	ns
Norway	0.025	0.033	ns	0.833	ns
Poland*	0.020	0.027	1.376	0.900	1.335
Romania	0.034	0.046	1.184	0.830	1.469
S Africa*	0.009	0.013	1.194	ns	ns
S Korea	0.051	0.083	1.180	0.719	1.719
Spain*	0.072	0.097	ns	0.710	ns
Turkey	0.008	0.010	1.139	ns	1.240
UK*	0.034	0.046	ns	0.799	ns

3.3 Bullying and subjective well-being

How does bullying affect children's subjective well-being in the Children's Worlds survey? There was no clear pattern of relationship at a country level between rates of bullying and mean subjective well-being scores, but the size of our sample of countries offers limited potential for identifying associations of this kind. So our focus here is on the link between bullying and subjective well-being at the level of the individual child.

It should be acknowledged before presenting the results that the association may be in both directions. It may be that children with low subjective well-being perceive that they are being left out or remember experiences of being hit more than children with higher subjective well-being. It may also be that children who have low subjective well-being are more likely to be a target of bullying, for example if they are more socially isolated.

At the bivariate level there are significant associations between experiences of being bullied and subjective well-being. In the pooled eight-years-old survey mean life satisfaction scores were 88.1 for those who had not been bullied at all; 85.2 for those who had experienced one form of bullying; and 81.1 for those who had experienced both forms. In the pooled 10- and 12-years-old surveys the patterns were very similar with mean life satisfaction scores of 88.7, 85.7 and 80.0 respectively for the three groups. These differences in mean life satisfaction scores between the three groups were statistically significant in almost all countries individually. The exceptions were for the eight-years-old age group in Nepal and the 10- to 12-years-old age group in Ethiopia and Malta.

The regression below using age, deprivation and bullying explains 5.6% of the variation in life satisfaction scores of 8-year-olds in the pooled sample. Deprivation and bullying both have a negative effect on subjective well-being. Gender did not make a statistically significant contribution to the model at the 99% confidence level.

Table 9: Regression of life satisfaction scores for eight-year-olds

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	90.195	.626		144.166	0.000
Gender	.896	.356	.023	2.519	.012
Deprivation (4 item)	-3.539	.151	-.210	-23.504	.000
Bullied	-4.420	.363	-.109	-12.175	.000

We then ran the regression separately for each country. We found that gender only made a significant contribution to explaining variation in subjective well-being in Estonia and that deprivation did not make a significant contribution in five countries – Nepal, Poland, South Africa, South Korea and Spain. The bullying variable made a contribution in all countries except Nepal and Israel. Table 10 shows the adjusted R^2 statistics for the model with gender and deprivation (Model 1) and then also including the bullying variable (Model 2). The final column shows the improvement in explanatory power when the bullying variable is introduced. The improvement is largest in Norway followed by Germany and Poland. Bullying makes very little contribution to the model in Israel and Nepal where the coefficients were non-significant.

Table 10: Explanatory power of linear regression models for subjective well-being, 8-years-old survey

Country	Model 1	Model 2	R^2 change
Algeria*	3.4%	6.8%	+3.4%
Colombia*	3.2%	7.4%	+4.2%
Estonia	10.5%	12.7%	+2.2%
Ethiopia	7.7%	9.7%	+2.0%
Germany	0.9%	8.1%	+7.2%
Israel	2.8%	3.3%	+0.5%
Malta	1.8%	3.8%	+2.0%
Nepal	0.0%	1.0%	+1.0%
Norway	1.8%	14.6%	+12.8%
Poland*	0.7%	7.8%	+7.1%
Romania	3.9%	7.3%	+3.4%
S Africa*	0.4%	2.6%	+2.2%
S Korea	1.1%	6.6%	+5.5%
Spain*	0.3%	4.9%	+4.6%
Turkey	4.2%	5.1%	+0.9%

UK*	2.8%	8.3%	+5.5%
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Table 11 shows a regression of life satisfaction using the contextual and bullying variables for the 10- and 12-years-old surveys.

Table 11: Regression model of life satisfaction 10 and 12 year olds.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	122.298	1.308		93.488	.000
Age group	-2.533	.112	-.138	-22.615	.000
Gender	-.802	.223	-.022	-3.595	.000
Deprivation (9 item)	-1.528	.052	-.178	-29.207	.000
Bullied	-4.873	.225	-.133	-21.664	.000

As with the eight-years-old data we then ran the regressions for each country individually. In this case the final model included four variables – gender, age group, deprivation and whether bullied. In this case we were able to use the more comprehensive nine-item deprivation score.

Here, gender only made a significant contribution to the model in four countries – Spain, Ethiopia, South Korea and Germany with girls having lower subjective well-being than boys. Age group made a contribution in all countries – with 12-year-olds having lower subjective well-being than 10-year-olds. The deprivation score significantly contributed to the model in all countries – with more deprived children having lower subjective well-being. Finally, the bullying variable contributed significantly to the model in all countries except Nepal.

Table 12 shows the adjusted R^2 of the two models. Model 1 includes gender, age group and deprivation. Model 2 additionally includes the bullying variable. The improvement in explanatory power when bullying is added is shown in the final column. First of all it can be seen that there is wide variation in the explanatory power of Model 1 – indicating that gender, age and deprivation make a different contribution to explaining variations in subjective well-being between countries. In most countries, of these three variables, much the largest contribution to this model is made by deprivation. For example, in Algeria the deprivation score alone explained 14.3% of the variation in subjective well-being and in Ethiopia and Romania it explained 9.3% and 8.8% respectively. In South Korea and Nepal deprivation explained less than 2% of the variation in subjective well-being.

Turning to the main focus of our analysis, the final column highlights the varying contribution of bullying to explaining variations in subjective well-being across countries. The bullying variables make a substantial improvement (more than 5% in all cases) to the explanatory power of the model in the Germany, Poland, the UK and Norway. On the other hand they make very little contribution (less than 1%) in Nepal and Romania and a small contribution (less than 2%) in Colombia, Ethiopia and South Africa.

Table 12: Explanatory power of linear regression models for subjective well-being, 10- and 12-years-old surveys

Country	Model 1	Model 2	R ² change
Algeria*	15.4%	16.6%	+1.4%
Colombia*	6.2%	7.8%	+1.6%
Estonia	9.2%	11.3%	+2.1%
Ethiopia	10.6%	11.7%	+1.1%
Germany	8.4%	15.9%	+7.5%
Israel	7.1%	9.4%	+2.3%
Malta	3.1%	6.4%	+3.3%
Nepal	4.4%	4.5%	+0.1%
Norway	3.0%	8.1%	+5.1%
Poland*	9.9%	16.9%	+7.0%
Romania	9.7%	10.3%	+0.6%
S Africa*	8.2%	10.0%	+1.8%
S Korea	10.5%	12.9%	+2.4%
Spain*	9.5%	12.3%	+2.8%
Turkey	9.3%	12.1%	+2.8%
UK*	4.5%	10.8%	+6.3%

The analysis above is based on mean life satisfaction scores but given the skewed nature of the distribution of subjective well-being it is always worth looking at the tail of the distribution. So the analysis was repeated using logistic regression on the odds of having a subjective well-being score of less than 50 out of 100.

Table 13 presents the results for eight-year-olds. The odds of being in the tail in the pooled sample are not significantly different for boys and girls. However they are much higher if the child lacks four deprivation items than if they lacked none and they are more than twice the odds if they have been hit and left out compared with those who have experienced no bullying.

Table 13: Logistic regression of the odds of having low life satisfaction, 8-year-olds

	B	S.E.	Wald	df	Sig.	Exp(B)
Female						1.000
Male	.057	.082	.487	1	.485	1.059
Lacking no items			140.900	4	.000	1.000
Lacking 1 item	.360	.113	10.120	1	.001	1.433
Lacking 2 items	.663	.131	25.794	1	.000	1.941
Lacking 3 items	.754	.108	48.331	1	.000	2.125
Lacking 4 items	1.962	.187	110.591	1	.000	7.116
No bullying			82.186	2	.000	1.000
Bullying hit or left out	.322	.105	9.374	1	.002	1.380
Bullying hit and left out	.884	.101	77.242	1	.000	2.420
Constant	-3.610	.099	1325.391	1	.000	.027

Table 14 presents the same results for 10- and 12-year-olds. Here we are able to use the nine-item deprivation scale. The odds of being in the tail in the pooled sample are lower for boys and for 10-year-olds they are also much lower the fewer items are lacking. They are also much lower if there is no bullying.

Table 14: Logistic regression of the odds of being in the tail of life satisfaction 10- and 12-year-olds

	B	S.E.	Wald	df	Sig.	Exp(B)
10 years old						1.000
12 years old	.602	.059	103.524	1	.000	1.826
Female						1.000
Male	.306	.057	28.391	1	.000	1.358
Deprivation (9-item)	.178	.011	240.473	1	.000	1.195
No bullying			314.128	2	.000	1.000
Bullying hit or left out	.364	.070	27.085	1	.000	1.440
Bullying hit and left out	1.203	.069	302.759	1	.000	3.329
Constant	-4.362	.082	2811.261	1	0.000	.013

Finally, Table 15 shows some results of logistic regressions for each country in the 10- and 12-years-old surveys. Model 1 includes age group, gender and the nine-item deprivation scale. Model 2 additionally includes the binary bullying variable (we chose to use this reduced version of the variable in these models in order to minimise issues with empty and sparse cells in the data matrix). The final column shows the improvement in the pseudo- R^2 when the bullying variable is added to the model.

Although the size of the changes in explanatory power in this table are generally smaller than those in the comparable linear regressions summarised in Table 12, the overall patterns are broadly the same. The improvement in the models when the binary bullying variable is added are largest in high-income countries, particularly those in northern Europe. Inclusion of

the bullying variable leads only to a very small improvement (1% or less) in the model in Ethiopia, Nepal, Romania, Colombia and South Africa.

Table 15: Explanatory power of logistic regression model for low subjective well-being, 10- and 12-years-old surveys

Country	Model 1	Model 2	R ² change
Algeria*	13.4%	16.3%	+2.9%
Colombia*	7.5%	8.3%	+0.8%
Estonia	7.4%	8.9%	+1.5%
Ethiopia	10.6%	10.7%	+0.1%
Germany	9.9%	18.8%	+9.9%
Israel	7.7%	9.2%	+1.5%
Malta	4.5%	6.7%	+2.2%
Nepal	4.0%	4.5%	+0.5%
Norway	4.9%	12.1%	+7.2%
Poland*	9.2%	17.4%	+8.2%
Romania	16.7%	17.3%	+0.6%
S Africa*	11.5%	12.5%	+1.0%
S Korea	7.3%	9.9%	+2.6%
Spain*	6.2%	9.8%	+2.6%
Turkey	10.6%	12.9%	+2.3%
UK*	4.6%	11.3%	+6.7%

4 Conclusions

4.1 Discussion

It is now well established, across a range of countries and contexts, that children who are bullied by other children are also more likely to experience poor mental and emotional health. There is also a growing body of evidence of negative longer-term outcomes in adulthood linked to being bullied as a child. Bullying therefore warrants serious consideration as a social policy issue affecting people's quality of life.

The Children's Worlds survey confirms the previous work from the Global School-based Student Health Survey (GSHS) and the Health Behaviour in School-aged Children survey that bullying varies across countries - using a wider variety of countries and younger age groups than these other studies. The analysis confirms that bullying declines with age group. We have also found different patterns of bullying between being hit and being left out between countries though there is an association between them. Countries with high rates of being hit also have higher rates of being left out.

In the pooled data there were significant differences in rates of bullying according to gender, age and material deprivation. Boys were more likely to be bullied than girls; rates of bullying declined with age between 8 and 12 years old; and children who had higher levels of material deprivation were more likely to be bullied. Although these findings from the pooled analysis also apply in many countries individually, our analysis also shows some important differences. In most countries, age group was the most important variable in explaining the

likelihood of being bullied. However this was not the case, for example, in Colombia where gender differences were more important than age differences. On the other hand in the UK, there were no gender differences and in Norway (exceptionally) girls were more likely to be bullied than boys. The influence of material deprivation also varied considerably from one country to another. Overall, our analysis indicates that there is substantial variation in the extent to which demographic and economic factors explain variations in bullying rates within countries.

We can also confirm that bullying is associated with variation in mean levels of subjective well-being and with the risks of having low subjective well-being. This was the case for almost all countries in the study and remained after controlling for age, gender and deprivation. The extent to which experiences of being bullied explained variation in subjective well-being varied considerably from one country to another. Although the picture here was not completely straightforward, there do appear to be some regional patterns to this association. The four strongest associations were in northern European countries (the UK, Germany, Poland and Norway) while the two weakest associations were in Ethiopia and Nepal. It does appear that there is a link between the strength of the link between bullying and subjective well-being and the wealth of the country – with bullying having a greater impact in richer countries.

This leads to the policy conclusion that emerges from this research. If countries want to improve the subjective well-being of their children they certainly need to reduce levels of deprivation but also to reduce bullying rates. In some countries deprivation is already very low and in these countries substantial effects could potentially be generated by reducing bullying.

4.2 Strengths and limitations

The data we analysed consists of representative samples of children in a very diverse range of countries and also focuses on an age group of children who have been relatively neglected in previous international comparative research.

There are however also a number of weaknesses to acknowledge in this study in relation to the analysis presented in this article. The questions on bullying are inevitably limited and in future waves of the Children's Worlds survey could be elaborated. In particular it will be important to cover bullying perpetrated through name-calling; sibling bullying which was found to be as prevalent as school bullying in a British sample (Wolke et al., 2015); and also possibly cyber bullying. In general it would be useful to know who was doing the hitting – classmates, older pupils, siblings, others and also how deliberate/hard it was. Also the questions do not cover cyber bullying about which there is growing concern especially in rich countries.

The wording and specification of our bullying variables could also be improved. In particular the question about being hit by other children may have been interpreted by children as including fighting between equals and also possibly 'play fighting'. This does cast some doubt on the reliability of the data for this variable.

We are also short of explanatory variables. These are inevitably constrained by the fact that children are the respondents and children as young as eight years old. Also it is difficult to

obtain factual data that is relevant across so a wide range of cultures. We did try “born in this country”, living with siblings and number of employed adults in the household but none of these contributed to variation in bullying (or subjective well-being) in the pooled sample. Better information of these and on religion, ethnicity, and family structure even just at national level would be useful.

This shortage of explanatory variables also raised the possibility that the contribution of the bullying variable to explaining variations in subjective well-being may be spurious as bullying may be acting as a proxy for other unmeasured variables.

Finally we should note that, given the cross-sectional nature of the data, we do not know the direction of links between bullying and subjective well-being, and it is plausible that these run in both directions.

4.3 Conclusions

Our analysis adds to the relatively small body of literature on the links between experiences of being bullied and child subjective well-being. The results suggest that the likelihood of being bullied has different contextual correlates across the diverse set of countries included in this study. The experience of being bullied also has substantively different sized associations with subjective well-being across countries. Initiatives to reduce bullying appear to have potential to improve child subjective well-being, particularly in high-income countries.

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